



Air Quality Permitting Statement of Basis

March 9, 2005

Permit to Construct No. P-040036

Woodgrain Millwork, Nampa

Facility ID No. 027-00060

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FINAL

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Acronyms, Units, and Chemical Nomenclatures

acfm	actual cubic feet per minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
Btu/hr	British thermal unit per hour
CO	carbon monoxide
°F	degrees Fahrenheit
DEQ	Department of Environmental Quality
gr/dscf	grains per dry standard cubic feet
EL	screening emissions levels
EPA	U.S. Environmental Protection Agency
ft	feet
ft ³	cubic feet
gal/hr	gallons per hour
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
MACT	Maximum Achievable Control Technology
MSDS	Material Safety Data Sheet
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
O&M	Operations and Maintenance
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM80	synthetic minor source with emissions greater than or equal to 80% of a Tier I operating permit major source threshold
SO ₂	sulfur dioxide
TAPs	toxic air pollutants
T/yr	tons per any consecutive 12-month period
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Woodgrain Millwork, Inc. (Woodgrain) produces interior and exterior panel doors at its Nampa facility.

3. FACILITY / AREA CLASSIFICATION

This facility is classified as a synthetic minor facility because operational limits limit the facility's potential to emit below major source thresholds. The AIRS facility classification is SM80 for VOCs. An SM80 facility classification means the facility's potential to emit is greater than or equal to 80% of the Tier I operating permit major source threshold. This PTC increases VOC emissions from the facility by 77.85 T/yr, which leads to facility wide VOC emissions to 91.10 T/yr.

The facility is located within AQCR 64 and UTM zone 11. The facility is located in Canyon County which is designated unclassifiable for all criteria pollutants (PM₁₀, CO, NO_x, SO₂, lead, and ozone).

The AIRS information provided in Appendix A defines the classification for each regulated air pollutant at Woodgrain. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

The application is for the construction of water-borne prime line at Woodgrain's Nampa facility. The prime line will apply water-borne primer to substrate using an automated flat line finishing system. The maximum application rate of the prime line is 11.5 gal/hr. The process is limited by the drying capacity of the oven. Coated substrate is dried in an infrared 480,000 Btu/hr natural gas-fired oven known as the AES infrared drying system.

4.1 Application Chronology

October 12, 2004	DEQ received the PTC application from Woodgrain for the construction of water borne prime line.
November 12, 2004	DEQ declared the application complete.
November 18, 2004	Woodgrain submitted to DEQ facility wide emissions inventory through email.
December 14 12, 2004	DEQ received Woodgrain's request for reviewing draft permit before the final issuance.
January 11, 2005	DEQ provide the facility draft permit to Woodgrain.
February 18, 2005	DEQ received an email indicating that the facility has no comments on the facility draft permit.

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action.

5.1 Equipment Listing

Prime Line

Type: Flat line
Manufacturer: Woodgrain
Model: WGSYS100111GA
Maximum capacity: 11.5 gal/hr
Normal maximum feed input: 9 gal/hr
Stack ID: 11GF
Stack height: 30 ft
Exit diameter: 1.5 ft
Exit gas volume: 5,000 acfm
Exit gas Temperature: 30-90 °F

AES Infrared Drying System

Rated heat input capacity: 480,000 Btu/hr
Maximum amount burned/hr: 480 ft³
Stack ID: 11GI
Stack height: 24 ft
Exit diameter: 1.5 ft
Exit gas volume: 4,000 acfm
Exit gas temperature: 110 °F
Fuel: natural gas

5.2 Emissions Inventory

Emissions estimates for the construction of the prime line were provided in the application. The emissions calculations submitted for this PTC were checked by DEQ for the bases of the emissions factors and references and found to be consistent with current DEQ methodology. Therefore, DEQ used the applicant emissions estimates as the basis for the permitting analyses of this project. Information on emissions estimates can be found in Appendix B of the Statement of Basis.

Table 5.1 provides a summary of the criteria air pollutants and toxic air pollutants (TAPs) emissions from the prime line, including that from the AES Infrared Drying System.

Table 5.1 SUMMARY OF EMISSIONS INVENTORY

Criteria Pollutant	Emissions Rate			EL
	PTE (T/yr)	Actual (T/yr)	(lb/hr)	(lb/hr)
VOC	77.85	44.44		
PM(PM ₁₀)	0.016	0.016		
CO	0.18	0.18		
NO _x	0.21	0.21		
SO ₂	0.0013	0.0013		
Toxic pollutant				
Dipropylene Glycol Monomethyl Ether			6.35	40
Kaolin (Repairable Dust)			0.00006	0.133
Crystalline Silica Quartz			0.000002	0.0067

* As determined by a pollutant-specific EPA reference method, DEQ-approved alternative, or as determined by DEQ's emissions estimation methods used in this permit analysis.

5.3 Modeling

As shown in Table 5.1, emissions of PM₁₀, CO, NO_x, and SO₂ are below the modeling thresholds as established in Table 1 of the *State of Idaho Modeling Guideline* dated December 31, 2002; all potential TAPs emissions are below their respective screening emissions levels (EL) established in IDAPA 58.01.01.585; and there is no model available for VOC. Therefore, no modeling is required for this PTC.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 Permit to Construct Required

The proposed prime line does not qualify for a PTC exemption in accordance with Sections 220 through 223 of the Rules; therefore, a PTC is required.

IDAPA 58.01.01.203.02 NAAQS

Emissions of PM₁₀, CO, NO_x, and SO₂ are below the modeling thresholds as established in Table 1 of the *State of Idaho Modeling Guideline* dated December 31, 2002. Therefore, the construction of the prime line will not cause or significantly contribute to a violation of the NAAQS.

IDAPA 58.01.01.203.03 Toxic Air Pollutants

All potential TAPs emissions are below their respective EL established in IDAPA 58.01.01.585. The prime line is in compliance with TAP rules.

IDAPA 58.01.01.625 Visible Emissions

This regulation states that any point of emission shall not have a discharge of any air pollutant for a period aggregating more than three minutes in any 60-minute period of greater than 20% opacity.

This regulation is applicable to emissions points of the prime line and the oven for AES infrared drying system. DEQ doesn't foresee the possibility of opacity exceedance because the dry oven is natural gas-fired, and the prime line is controlled by the filter system consisting of two filters with control efficiencies of 99.08% and 99.74% respectively.

IDAPA 58.01.01.675 Fuel Burning Equipment

This regulation establishes particulate matter emission standards (grain loading standards) for fuel burning equipment. Fuel burning equipment is defined in IDAPA 58.01.01.006.41 as, "Any furnace, boiler, apparatus, stack and all appurtenances thereto, used in the process of burning fuel for the primary purpose of producing heat or power by indirect heat transfer."

This regulation is applicable to the oven of AES infrared drying system. The calculated result in Appendix C of this document demonstrates that the calculated PM concentration is less than the regulatory limit of 0.015 grains per dry standard cubic foot (gr/dscf) at 3% oxygen. Therefore, the oven of AES infrared drying system complies with this standard.

IDAPA 58.01.01.700 Particulate Matter - Process Weight Limitations

The purpose of Sections 700 through 703 is to establish particulate matter emission limitations for process equipment. The prime line is subject to IDAPA 58.01.01.701 because these processes commenced operation after October 1, 1979. The process is in compliance with the process weight rate limitation. Detailed calculations can be found in Appendix C of this statement of basis.

40 CFR 60 NSPS Requirements

The prime line and the AES infrared drying system are not subject to NSPS.

40 CFR 61 and 63 NESHAP and MACT Requirements

The prime line and the AES infrared drying system are not subject to NESHAP and MACT.

5.5 Fee Review

Woodgrain submitted a PTC application fee of \$1,000.00 when the original application was submitted, thus satisfying the requirement contained in IDAPA 58.01.01.224. The emissions increase from this project is between 10 T/yr and 100 T/yr, thus, a PTC processing fee of \$5,000.00 is required in accordance with IDAPA 58.01.01.225. The processing fee was received February 15, 2005.

Table 5.2 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.21	0	0.21
SO ₂	0.0013	0	0.0013
CO	0.177	0	0.177
PM ₁₀	0.016	0	0.016
VOC	77.98	0	77.98
TAPS/HAPS	0.01	0	0.01
Total:	78.4	0	78.4
Fee Due	\$ 5,000.00		

6. PERMIT CONDITIONS

- 6.1 Permit Condition 2.3 limits VOC emissions from the prime line to 77.85 tons per any consecutive 12-month period.
- 6.2 Permit Condition 2.5 requires the permittee develop an O&M manual for the prime line filter system to ensure control of particulate matter emissions.
- 6.3 Permit Condition 2.6 requires the curing oven be fired using natural gas exclusively.
- 6.4 Permit Condition 2.7 requires the permittee monitor and record the following information used to estimate VOC emissions:
 - the coating product name and manufacturer
 - the coating Material Safety Data Sheet (MSDS)
 - the coating density, in lb/gal
 - the coating VOC content, in percent by weight; or the coating VOC content, in lb VOC/lb coating
 - the coating throughput each month and each year, in gal/mo and gal/yr
- 6.5 Permit Condition 2.8 requires the permittee calculate the prime lines VOC emissions using the information above and following equation:
Each month, the permittee shall calculate the VOC emissions from the prime line using the following calculation method or DEQ approved alternative:

Monthly VOC emissions rate = $\sum G_i \times W_i \times \text{VOC}_i \text{ content}$

Annual VOC emissions rate = sum of the monthly VOC emissions rate over the previous consecutive 12-month period.

G_i : For each coating, the coating throughput for the previous month, in gal/mo

W_i : For each coating, the density of coating G_i , in lb/gal

$\text{VOC}_i \text{ content}$: For each coating, the VOC content of coating G_i , in percent by weight VOC as indicated in the MSDS provided by the coating manufacturer; or the VOC content of coating G_i , in lb VOC/lb of coating as indicated in the MSDS provided by the coating manufacturer

7. PUBLIC COMMENT

A draft permit was provided to the facility for review on January 11, 2005. On February 18, 2005, DEQ received an email from the facility indicating that the facility had no comments the facility draft permit.

A draft permit was provided for regional office review on December 29, 2004. The comments were received on January 5, 2005 and were addressed in the permit and the statement of basis.

An opportunity for public comment period on the PTC application was provided in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Woodgrain be issued a final PTC No. P-040036 for the water-borne prime line project. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

SYC/sd Permit No. P-040036

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Appendix A

AIRS Table

Permit to Construct No. P-040036

Woodgrain Millwork, Inc., Nampa

Facility ID No. 027-00060

Table A.1 AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO ₂	B						U
NO _x	B						U
CO	B						U
PM ₁₀	SM					SM	U
PT (Particulate)	B						
VOC	SM					SM80	U
THAP (Total HAPs)	B						
			APPLICABLE SUBPART				

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class "A" is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

APPENDIX B

Emissions Inventory

Permit to Construct No. P-040036

Woodgrain Millwork, Inc., Nampa

Facility ID No. 027-00060

**Woodgrain Millwork
Nampa Facility
Facility Emission Inventory**

Process Shavings Collection Equipment

Source	Flow Rate acfm	PM Emissions				Location	Material Handled & Source Description
		PM - 10 lb/hr	PM - 10 tpy	Control Equip.	Efficiency %		
Cyclone 1 (Sys 7)	16240	1.530	6.701	Cyclone	97.48	Bldg 1	Saw Dust Louver Door Fabrication line
Cyclone 2 (Sys 4)	11950	1.130	4.949	Cyclone	96.66	Bldg 2	Saw Dust Specialty Door Fab, Slicer Reclaim
Cyclone 3 (Sys 6)	18240	1.530	6.701	Cyclone	96.88	Bldg 3	Saw Dust Louver Door Fabrication line
Cyclone 4 (Sys 3)	48250	4.550	19.929	Cyclone	97.84	Bldg 3	Saw Dust Colonial Door Fabrication line
Cyclone 5 (Sys 2)	18500	1.740	7.621	Cyclone	96.00	Bldg 3	Saw Dust Wood Chipper, Prime Line
Cyclone 7 (Sys 9)	8700	1.490	6.526	Cyclone	97.78	Chip Bin	Chip bin clean-up cyclone
Baghouse 1 (Sys 5)	25133	0.020	0.088	Bag House		Bldg 3	Sander Dust, Vents to Plant and Atmosphere
Baghouse 2 (Sys 8)	33929	0.030	0.131	Bag House		Bldg 3	Sander Dust, Vents to Plant and Atmosphere
Baghouse 3 (Sys 1)	2500	0.013	0.057	Bag House		Chip Bin	Saw Dust, Shavings, Sander Dust
Baghouse 4 (Sys 10)	22500	0.030	0.131	Bag House		Bldg 3	Sander Dust, Vents to Plant and Atmosphere
		Total	52.836				

* The PM-10 emissions shown above are as noted in the current Tier II Permit 062-00001. The Spreadsheet is provided by the facility through an E-mail.

VOC Emissions

Source	Max Rate		Actual Rate Gal/yr	Density lb/gal	% VOC	Max Emissions		Actual Emissions ton/yr
	Gal/hr	Gal/yr				lb/hr	ton/yr	
Lamination (glue)	23.5	205,860	117,500	9.1	1.07%	2.28	10.01	5.71
Misc. Sources (glue)	6.5	56,940	32,500	9.1	1.07%	0.63	2.77	1.58
Catalyst (glue)	1.1	9,636	5,500	9.1	1.07%	0.11	0.47	0.27
						Total	13.24	7.56
Door Prime Line (New Source)	11.5	100,740	57,500	11.04	14.0%	17.77	77.85	44.44
						Total VOC	91.10	

Combustion Sources

APPENDIX C

Grain Loading and Process Weight Rate

Permit to Construct No. P-040036

Woodgrain Millwork, Inc., Nampa

Facility ID No. 027-00060

Source Information

Facility: Woodgrain Nampa Facility
Permit No.: P-040036
Facility ID No.: AES infrerad Drying System

Rated Heat Input Rate: ^a	0.48 MMBtu/hr
PM Emissions: ^b	0.004 lb/hr
Grain Loading Calculated: ^c	0.005 gr/dscf @ 3% O ₂
Grain Loading Standard ^b :	0.015 gr/dscf @ 3% O ₂
Does the boiler meet the standard? ^d	Y

Exit/Flue Gas Flowrate Calculation

F _d : ^e	8,710.0 dscf/MMBtu
Exit Gas flowrate @ 0% O ₂ : ^f	69.7 dscfm @ 0% O ₂
Exit gas flowrate @ 3% O ₂ : ^g	81.4 dscfm @ 3% O ₂

^a Input rated heat input rate in MMBtu/hr. You can convert 10⁶ scf/hr to MMBtu/hr by multiplying 1020 Btu/scf, natural gas average gross heating value.

^b The value automatically taken from the linked emissions calculation spreadsheet for this natural gas fired boiler.

^c grain loading(gr/dscf @3% O₂) = PM emissions (lb/hr) x 7,000 grain/lb /60 (min/hr) / exit gas flowrate @ 3%Q(dscfm).

^d When the calculated grain loading is less than the standard, the result will show "meet the grain loading standard" otherwise it will show "Not meet the grain loading standard".

^e Taken from 40 CFR 60 Appendix A, Method 19, Table 19-1. F_d: dry exit gas volumetric flow rate (under complete combustion, at standard condition, 68 F °, 1 atm) per MMBtu heat input of a fuel (dscf/MMBtu)

^f Exit gas flowrate @ 0% of Q (dscfm) = F_d (dscf/MMBtu) x rated heat input rate (MMBtu/hr) / 60 (min/hr)

^g Exit gas flowrate @ 3% Q of (dscfm) = Exit gas flowrate @ 0% of Q (dscfm) x 20.9/(20.9-3)

^h IDAPA 58.01.01.675

dscfm: dry standard cubic feet per minute
MMBtu/hr: million British thermal unit per hour
gr: grain

PROCESS WEIGHT RATE CALCULATION

Facility: Woodgrain Nampa Facility

Permit No.: P-040036

Facility Identification No.: 027-00060

Process ^a	Does process dehydrate sugar beet pulp or alfalfa? ^b	Process Weight Rate ^c	Commencing Operating Date ^d	Allowable Emissions ^e	Estimated Emissions ^f	In compliance? ^g	Note
	"yes/no"	lb/hr	m/d/yr	lb/hr	lb/hr	(Y/N)	
Prime Line	no	11.5	1/30/05	0.19	6.877E-05	Y	

^a Input the name of the process or the equipment that is subject to IDAPA 58.01.01.700 - process weight rate limitations.

^b If the process is used to dehydrate sugar beet pulp or alfalfa put "yes" otherwise put "no".

^c Process weight rate (permitted or rated maximum throughput rate) in pound per hour (lb/hr).

^d Process or equipment commencing operating date. If the day and the month are not available, put 1/1 for the month and the day.

^e The cell is programmed so that it automatically picks up the right equation from the following equations based on your input of the type of process, the process weight rate, and process commencing operating date.

IDAPA 58.01.01.701 Any process or process equipment commencing operation on or after October 1, 1979

a. If PW is less than 9,250 lb/hr

$$E = 0.045 \cdot (PW)^{0.60}$$

b. If PW is equal to or greater than 9,250 lb/hr

$$E = 1.10 \cdot (PW)^{0.25}$$

IDAPA 58.01.01.702 Any process or process equipment operating prior to October 1, 1979

a. If PW is less than 17,000 lb/hr

$$E = 0.045 \cdot (PW)^{0.60}$$

b. If PW is equal to or greater than 17,000 lb/hr

$$E = 1.12 \cdot (PW)^{0.27}$$

IDAPA 58.01.01.703. Particulate Matter – Other processes.

If the equipment is used exclusively to dehydrate sugar beet pulp or alfalfa, the following process weight rate rules apply.

a. If P is less than sixty thousand (60,000) pounds per hour,

$$E = 0.02518(PW)^{0.67}$$

b. If P is greater than or equal to sixty thousand (60,000) pounds per hour,

$$E = 23.84(PW)^{0.11} - 40$$

^f Input respective emissions rate in lb/hr. This rate was provided by the applicant.

^g The cell is programmed so that it automatically compares emissions rate with process weight rate limitation and shows "Y" if the process is in compliance with the process weight rate limitation otherwise shows